THE INSTITUTE OF PHYSICS

Vol. VI, No. 4 **BULLETIN** April, 1955

THIRTY-FIFTH ANNUAL GENERAL MEETING

NOTICE IS HEREBY GIVEN that the Thirty-Fifth Annual General Meeting of The Institute of Physics will be held at 5 p.m. on Tuesday, May 17, 1955, in the Institute's House, 47 Belgrave Square, London, S.W.1. Attendance is limited to Fellows and Associates of the Institute. The business to be conducted is the consideration of the Board's report, the accounts and balance sheets for 1954, the declaration of the election of the Honorary Officers and other members of the Board nominated, and the election of auditors. A copy of the annual report and accounts is printed in this issue of the *Bulletin*. Further copies will be sent on request.

B. P. Dudding,
Honorary Secretary.

April 8, 1955.

NOMINATIONS TO THE BOARD

Fellows and Associates will have received formal notifications of the Board's nominations to fill vacancies on the Board which will occur on September 30 next. These are :

President :	*Sir John Cockcroft, K.C.B., C.B.E., F.Inst.P., F.R.S., *Nobel Laureate*, Director, Atomic Energy Research Establishment, Harwell.
Vice-President : (one vacancy)	W. H. Taylor, M.A., D.Sc., F.Inst.P., University Reader in Crystallography, Cavendish Laboratory, Cambridge.
Hon. Treasurer :	*S. Whitehead, M.A., D.Sc., M.I.E.E., F.Inst.P., Director, British Electrical and Allied Industries Research Association, Greenford, Middlesex.
Hon. Secretary :	*B. P. Dudding, M.B.E., A.R.C.S., Ph.D., F.S.G.T., F.Inst.P., Vice-Chairman Scientific Advisory Panel and Research Physicist, Research Laboratories, The General Electric Co. Ltd., Wembley.

* For re-election to the same office.

Ordinary members of the Board : (three vacancies)

M. R. Hopkins, M.Sc., Ph.D., F.Inst.P., I.C.I. Research Fellow, University College of Swansea, University of Wales.

J. M. A. Lenihan, M.Sc., Ph.D., F.Inst.P., Regional Physicist, Western Regional Hospital Board, Scotland.

J. Taylor, M.B.E., Ph.D., D.Sc., F.R.I.C., M.I.Min.E., F.Inst.P., Director, Imperial Chemical Industries Ltd.

THE INSTITUTE'S FINANCE

A consolidated income and expenditure account and balance sheet is published in this *Bulletin* each year in order to present to those members who may wish to have it, a simple general picture of the Institute's financial affairs as a whole. The full details are of course to be found in the Board's annual report (page 63 of this issue) which will be presented for adoption to the Annual General Meeting on May 17 next.

The year shows a final net deficit of £2,064 which is nearly £2,000 greater than the deficit expected in the budget. This is because the sales of publications during the year were less than had been expected but mainly because in the light of the past few years' experience the Board decided to reduce substantially the book value of the stock of back numbers of the Journals. It is proposed to continue this process of reducing the book value of the stock in future years, but any incremental effect upon the accounts will be very much less in future years. For this reason the Endowment Trust Fund deficiency of £1,788 is carried forward in the Balance in the hope that it can be liquidated in the near future.

There is a possibility that the Institute may be called upon to pay a substantial increase in rent for the House, which may be made retrospective to January 1, 1954 ; because the legal position has not yet been resolved, and negotiations are still proceeding, no reserve has been put in for this possible liability.

It had been hoped that by now the financial reserves would have been bigger, but continually rising costs and increased calls on the Institute's funds in support of the important work of the Branches and Groups and for Conferences and educational work makes it necessary for the Board to be cautious about entering into new commitments or allowing appreciable expansion in the activities of the Institute as a whole, until there is a corresponding increase in income.

THE INSTITUTE OF PHYSICS

CONSOLIDATED BALANCE SHEET, 31ST DECEMBER, 1954

1953			
£		£	£
	FIXED ASSETS :		
	Furniture, Fittings and Office Equipment, at cost ...	5,081	
	Less : Depreciation ...	3,089	
1,884			1,992
	Alteration, Improvements and Adaptation of Premises, at cost	10,290	
	Less : Depreciation ...	3,415	
7,184			6,875
	CURRENT ASSETS :		
	Stock on Hand	7,661	
	Less : Book Stock depreciation reserve	2,038	
6,588			5,623
4,897	Debtors		6,499
48	Subscriptions in Arrears ...		53
9,466	Investments, at cost ... ... (mean market value : £12,377)		12,294
3,940	Leasehold Redemption Policy		4,925
9,022	Bank Balances and Cash in Hand		6,424
—	Endowment Trust Fund. Income and Expenditure Account Balance (Deficit) ...		1,788
£43,029			£46,473

1953		
£		£
5,000	Life Membership Fund...	4,948
13,089	Reserve Fund	17,583
3,834	Endowment Trust Fund	100
208	Furnishing Fund	—
	CURRENT LIABILITIES :	
8,239	Subscriptions to 1955 Journals and payments from members in advance	9,542
5,103	For Expenses, including Production of Publications	2,632
7,553	X-ray Index Fund	10,037
3	Bowen Prize Fund	6
—	Mrs. Phillips Bequest	1,625
£43,029		£46,473

NOTE.—Members who compare the above figures for 1953 with those published last year will observe that the assets of the Benevolent Fund, amounting to £4,170 in 1953 (£4,473 in 1954), have been excluded from the figures now given.

THE INSTITUTE

CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT

1953 £		£
	To Office and General Expenses :—	
12,766	Salaries and National Insurance and Staff Superannuation	13,945
3,862	Rent, Rates, Lighting, Cleaning and Maintenance	4,320
1,161	Postage and Telephone	1,206
782	Travelling Expenses, Board and Committee meetings	620
17,425	„ Production and Distribution of Publications (excluding cost of office labour and overheads)	17,668
1,872	„ Miscellaneous Office Expenses, Printing and Stationery	1,372
359	„ Bulletin (net)	323
1,793	„ Branches and Groups (including Australia)	2,100
873	„ Conferences and Conventions	350
148	„ Educational work, Examinations (net) and Special reports	225
481	„ Miscellaneous expenses and House vote	785
—	„ List of Members	582
—	„ Science Abstracts, Basic payment	300
41,522		43,796
1,646	„ Copies of Journals supplied to Members	1,671
—	„ Decrease in Stock of Publications	1,315
3,763	„ Surplus for the year before deduction for depreciation, etc.	—
£46,931		*£46,782*
—	To Deficiency brought down	570
378	„ Amount written off expenditure on alterations, etc., to House	309
344	„ Depreciation of Furniture and Fittings	381
985	„ Leasehold Redemption Policy Premium	985
1,566	„ Books, Stock depreciation reserve adjustment	*Cr.* 181
490	„ Final surplus for the year	—
£3,763		*£2,064*

OF PHYSICS

FOR THE YEAR ENDED 31ST DECEMBER, 1954

1953			
£			£
24,598	By	Receipts from Publications	23,562
7,018	„	Receipts from Advertisements in Journals	7,662
11,509	„	Member's subscriptions, entrance and application fees ...	12,390
200	„	Dividends and Interest	277
184	„	Donations received by Trust Fund	15
300	„	Scientific Publications Grant (per Royal Society) ...	—
—	„	Contribution from X-Ray Index Fund for publication of book	500
43,809			44,541
1,646	„	Copies of Journals supplied to Members	1,671
1,476	„	Increase in Stock of Publications	—
—	„	Deficiency for the year	570
£46,931			£46,782
3,763	By	Surplus brought down	—
—	„	Final deficiency for the year	2,064
£3,763			£2,064

NOTICES TO MEMBERS

Formation of new branch : Liverpool and North Wales

Informal discussions have been taking place for some months among some members of the Manchester and District Branch with a view to forming a branch centred on Liverpool. It was eventually decided to propose that the area to be covered should be Merseyside and North Wales and a formal request in accordance with By-Law 38 was submitted to the Board at its meeting on March 15. Approval was then given for the formation of a Liverpool and North Wales Branch of the Institute. An inaugural meeting has been planned for May 19 ; details will be announced in the May *Bulletin* and will be circulated to members in the Branch area. The proposal for the new branch was initiated by Dr. J. D. Craggs (*Fellow*) of the University of Liverpool.

Enquiry into the availability of places for students of physics

Towards the end of 1954 the Board requested the Deputy Secretary to conduct an enquiry among universities and the principal technical colleges in order to obtain data concerning the places that are available for students wishing to read for a qualification in physics. A first report on the information obtained was presented to the Board at the meeting on March 15 and it was agreed that a full report should be submitted for the consideration of a joint meeting of the Education Committee and the Membership and Examinations Committee. It is expected that the comments of these committees will, after submission to the Board, be published as a report.

Physics in Industry Series : X-ray Diffraction by Polycrystalline Materials

The latest volume in the Institute's " Physics in Industry Series," *X-ray Diffraction by Polycrystalline Materials*, will be published on April 20. The technical editors are H. S. Peiser, H. P. Rooksby and Prof. A. J. C. Wilson. This volume, by some thirty members of the Institute's X-ray Analysis Group, provides a comprehensive survey of practical methods of investigating crystals in powdered or polycrystalline condition. There is a foreword by Sir Lawrence Bragg. The book is in three parts : experimental techniques, interpretation of data, and practical uses of the techniques in different fields. It contains over 250 figures and the extent is 725 pages. The retail price of the book is 63s., but members may obtain one copy for their personal use at the special rate of 50s. Orders, which should be accompanied by a remittance ,should be sent to the Institute.

REPORT OF THE BOARD OF THE INSTITUTE OF PHYSICS FOR THE YEAR 1954

To be presented for adoption at the Annual General Meeting of the Institute on May 17, 1955

The Board and its Committees

The present Board took office on October 1, 1954; its members are:

President: Sir John Cockcroft.

Immediate Past-Presidents: Prof. W. E. Curtis, Dr. C. Sykes.

Vice-Presidents: Mr. O. W. Humphreys, Prof. T. L. Ibbs, Mr. G. R. Noakes Prof. F. A. Vick.

Honorary Treasurer: Dr. S. Whitehead.

Honorary Secretary: Dr. B. P. Dudding.

Ordinary Members of the Board: Dr. H. Barrell, Dr. N. A. de Bruyne, Dr. P. S. H. Henry, Dr. K. A. G. Mendelssohn, Mr. A. T. Pickles, Mr. H. P. Rooksby, Dr. W. H. Taylor, Mr. R. G. Wood.

Chairman of Branches in Great Britain: Dr. J. S. Forrest (London & Home Counties), Mr. W. J. Meredith (Manchester & District), Dr. W. Betteridge (Midlands), Professor W. E. Curtis (North Eastern), Prof. W. H. J. Childs (Scottish), Mr. R. G. Wood (South Wales), Prof. E. C. Stoner (Yorkshire).

Representing the Physical Society: Dr. A. B. Wood and Dr. C. G. Wynne.

During the year the Board met six times and appointed the undermentioned Standing and Executive Committees which held twenty-four meetings.

	Chairmen
Finance and General Purposes Committee	The Treasurer.
Membership Committee	Mr. H. P. Rooksby.
Education Committee	Dr. W. H. Taylor.
Benevolent Fund Committee	The Treasurer.
Advisory Committee of the British Journal of Applied Physics	Dr. T. E. Allibone.
Advisory Committee of the Journal of Scientific Instruments	Dr. H. Barrell.
Conference and Convention Organizing Committees:—	
Physics of Particle Size Analysis—Nottingham, 1954	Mr. F. I. G. Rawlins.
Conference on "The Physics of Nuclear Reactors"—London, 1956	Dr. T. E. Allibone.

Representatives on Joint Committees and other Bodies

The Institute has been represented as follows:

On the Royal Society's National Committee for Physics: Mr. J. H. Awbery.

On the Royal Society's National Committee for Crystallography: Prof. E. G. Cox.

On the Royal Society's Paul Instrument Fund Committee: Sir Frank Smith.

On the Joint Council of Professional Scientists: The President, Dr. S. Whitehead, and Dr. H. R. Lang.

On the Parliamentary and Scientific Committee: Dr. B. P. Dudding and Dr. H. R. Lang on the General Committee, together with Dr. J. S. Forrest and Dr. S. Whitehead at the Annual Meeting.

On the City and Guilds of London Institute's Advisory Committee on the Education and Training of Laboratory Technicians: Mr. N. Clarke, Mr. T. H. Tyler and Mr. L. Walden.

On the City and Guilds of London Institute's Advisory Committee on the Training of Instrument Mechanics and Technicians: Mr. N. Clarke.

On the City and Guilds of London Institute's Exploratory Committee on Industrial Radiography: Mr. N. Clarke, Mr. F. Y. Poynton and Mr. W. E. Schall.

On the Joint Committee with the Ministry of Education for National Certificates in Applied Physics : Dr. J. S. Forrest, Dr. W. Betteridge, Dr. J. Topping and Dr. C. G. Wynne.

On the Joint Committee with the Scottish Education Department for National Certificates in Applied Physics : Mr. T. H. O'Beirne, Dr. R. S. Silver and Dr. A. G. White.

On the British Committee for Radiological Units : Mr. W. Binks.

On the Joint Committee (with the American Society for Testing Materials and The American Crystallographic Association) for Chemical Analysis by X-ray Diffraction Methods : Prof. A. J. C. Wilson.

On the Physics and Mathematics Advisory Committee of the Technical and Scientific Register of the Ministry of Labour : The President and Dr. H. R. Lang.

On the London Regional Advisory Committee on Applied Physics : Mr. N. Clarke, Mr. F. Y. Poynton and Mr. G. W. Warren.

On the Court of the University of Hull : Dr. E. C. Craven.

On the Governing Body of Croydon Polytechnic : Mr. C. L. S. Gilford.

On the Governing Body of Norwood Technical College : Dr. J. S. Forrest.

On the Advisory Sub-Committee for Electrical Engineering and Applied Physics of Cardiff College of Technology and Commerce : Mr. R. G. Wood.

On the Sub-Committee on Specialist Courses in Electrical Engineering of the Welsh Academic Board of Technology : Mr. W. S. Vernon.

On the Applied Science Advisory Committee of the Royal Technical College, Salford : Mr. D. A. Crooks.

On the Advisory Committee of the Ipswich School of Technology : Mr. H. A. Nancarrow.

On the Science Advisory Committee of Blackburn Technical College : Dr. A. Hargreaves.

On the Science Advisory Committee of Bury Municipal Technical College : Dr. G. D. Rochester.

On the Applied Science Advisory Committee of the Wolverhampton and Stafford Technical College : Dr. W. Betteridge.

On the Science Advisory Sub-Committee of Poole College for Further Education : Mr. C. F. Oxbrow.

On the East Anglian Regional Advisory Council for Further Education : Mr. H. A. Nancarrow.

On the Yorkshire Council for Further Education Advisory Panel for Applied Physics : Mr. S. L. Anderson, Dr. K. W. Andrews, Dr. M. O. Pelton and Mr. E. Wilfred Taylor.

On the Bucks County Education Committee, Slough Area Science Advisory Committee : Mr. J. Yarwood.

On the Regional Council for Further Education for the South West : Prof. S. H. Piper.

On British Standards Institution Committees : The Institute has been represented on eighteen committees of the B.S.I.

General Meetings — Changes in By-laws concerning subscriptions

The 34th Annual General Meeting of the Institute was held on May 18 in the Institute's House. In addition to the normal business the meeting approved amendments to By-laws 21 (c) and 24, as special business. These concerned the subscription rates of Graduates and Subscribers permanently resident oversea.

An Extraordinary General Meeting of the Institute was held on December 15 when amendments to By-law 32 were approved. These concerned the subscription rates for Students.

Membership

During the year 579 applications for election or transfer to the various grades were received for submission to the Membership and Examinations Committee, compared with 581 applications in 1953. The numbers for the grades (with the 1953 numbers in brackets) were : Fellows 43 (48), Associates 179 (179) Graduates 225 (213), Students 93 (111) and Subscribers 39 (30). The Interview Panel met once and interviewed four candidates. Representatives of the Committee visited three technical colleges, which had applied for recognition by the Institute. The Board recognized the degrees of the University College of North Staffordshire on the recommendation of the Committee. Professor S. H. Piper was appointed to be an Examiner on the Interview Panel, in place of Professor A. M. Tyndall.

Table 1. *Changes in the Register during 1954*

	Total on Dec. 31, 1953	*New*	*Transfers in*	*Re-admitted*	*Resigned*	*Deceased*	*Removed*	*Transfers from*	*Net Increase or Decrease*	*Total on Dec. 31, 1954*
Hon. Fellows	6	—	—	—	—	1	—	—	- 1	5
Fellows -	944	7	36	2	1	10	4	—	+ 30	974
Associates -	1738	72	82	2	2	—	3	36	+115	1853
Graduates -	841	129	70	—	7	1	3	76	+112	953
Companions-	—	—	—	—	—	—	—	—	—	—
Subscribers -	447	39	1	—	19	1	10	4	+ 6	453
Students -	619	101	—	—	25	1	110	73	-108	511
TOTAL -	4595	348	189	4	54	14	130	189	+154	4749

Deaths.—The Board records with regret the deaths reported in 1954 of :—

Honorary Fellow : G. F. C. Searle. *Fellows :* H. S. Allen, Sir S. S. Bhatnagar, A. Blackie, S. Brodetsky, R. S. Clay, F. L. Hopwood, W. J. Jones, F. E. J. Ockenden, D. J. McNaughton, H. G. Yates. *Graduate :* G. Starford. *Subscriber :* T. L. Tippell. *Student :* C. B. Kirwan.

Expulsion.—The Board regrets to have to record that in accordance with Article 12 the membership of a Fellow who had been convicted of a criminal offence was terminated.

Examinations

Graduateship Examination.—The Graduateship Examination was held on June 21–25. Written papers were taken at the Institute's House, the College of Technology, Birmingham, and Paisley Technical College. The practical examination was held at the Polytechnic, Regent Street, London. The papers were subsequently published in pamphlet form.

Seventy-seven candidates were accepted but 23 candidates withdrew, mainly requesting a transfer of their applications to the 1955 examination. Of the remaining 54 candidates, 19 satisfied the examiners in those papers which they were required to take. Twelve question papers were set. The Examiners were : Professor A. M. Tyndall, Professor F. A. Vick, Mr. A. E. De Barr, Dr. J. Topping, Mr. E. D. van Rest, Mr. J. Yarwood, and Mr. N. Clarke. Professor J. G. Wilson was appointed to be an Examiner for 1955 in place of Professor A. M. Tyndall.

The Board accepted the recommendations of the Membership and Examinations Committee that students who do not possess suitable examination evidence of general education should be permitted to take the General Education paper of the Graduateship Examination as early in their courses as they wished.

National Certificates in Applied Physics.—The number of candidates taking the final examinations for National Certificates in Applied Physics was 206 at the Ordinary level and 75 for the Higher Certificate. These figures compare with 151 and 55 respectively in 1953. The Institute's assessors were :

England and Wales : Dr. J. Topping, Mr. G. R. Noakes, Mr. G. W. Warren.

Scotland : Dr. G. Morris.

On April 12, 1954, a one-day conference was held in the Institute's House. The attendance, which was by invitation, consisted of teachers in colleges offering courses for National Certificates in Applied Physics, the Institute's assessors, members of the Joint Committee for National Certificates in Applied Physics and some representatives of industry. Papers were presented by : Mr. G. W. Warren, Mr. J. Newton, Mr. A. E. De Barr, Dr. J. E. Smith, Mr. H. W. French, Dr. J. Topping, Mr. G. R. Noakes, and Dr. G. Morris.

Education

Higher Technological Education.—The Institute has continued to support proposals for the development of the facilities for higher technological education along the lines indicated in the Report published by the Institute in 1948 (*The Education and Training of Technologists*). During the year the larger professional institutions have come to close agreement on policy proposals broadly similar to those contained in that Report. Discussions have taken place with representatives of the four other constituent bodies of the Joint Council of Professional Scientists and with the three major engineering institutions. The position now generally accepted and supported by the Institute's representatives was described in an article published in the *Journal of the Royal Institute of Chemistry*. A deputation from the professional bodies in support of this policy, and on which the Institute was represented, was received by senior permanent officials of the Ministry of Education.

Enquiry into the availability of places for physics students in universities and technical colleges. Arising from reports to the Membership Committee indicating that there were several vacancies for undergraduates in departments of physics in some universities and large technical colleges, the Board decided that an enquiry should be made covering the physics departments of all universities in Great Britain and all the colleges recognized by the Institute. It is expected that the results of the enquiry will be available early in 1955.

Publications

The work involved in the production and distribution of the Institute's publications has continued to increase and now forms about half of the total work of the Institute.

The Journals. The circulation of both Journals again increased satisfactorily as did the revenue from advertisements.

The amount of material submitted and published in 1954 is shown in the following table, together with the corresponding figures for 1953.

Table 2. *Materials submitted and published in the Journals*

	J.S.I.		*B.J.A.P.*	
	1954	1953	1954	1953
Extent of Journal text (pages)	488	*501*	(466 + 218 (supplement)	(384 + 104 supplement)
Original papers (numbers) :				
Submitted	180	*162*	102	*136*
Accepted	121	*107*	66	*91*
Published...	137	*128*	79	*69*
Special Articles and Reports published (numbers)	3	*3*	15	*18*
Laboratory and Workshop Notes (numbers) :				
Submitted	60	*76*	—	—
Accepted	53	*58*	—	—
Published...	78	*63*	—	—
New Instruments, Materials and Tools :				
Items published	40	*60*	—	—
Notices of manufacturers' publications ...	—	*20*	—	—
Letters to the Editor published	25	*23*	14	*15*
New Books :				
Number of reviews published	23	*21*	92	*108*

Once again the Board wishes to record its thanks to those Fellows and others who have refereed papers and to those who have reviewed books and assisted the Editor in other ways.

The Advisory Committee of the *Journal of Scientific Instruments* while expressing satisfaction with the contents and standard of the Journal again advised the Board that the policy of publishing original contributions as quickly as possible and generally in preference to other material, should be continued. The Board accepted this recommendation.

In its annual report to the Board, the Advisory Committee of the *British Journal of Applied Physics* stated that " the Journal was now of a very high standard and was rapidly obtaining for itself a place among the leading scientific journals." Continuation of the present policy regarding Supplements to the Journal was advised by the Committee and after consulting the Finance Committee the Board concurred.

The Board expresses its thanks to the Scientific Instrument Manufacturers' Association of Great Britain Ltd. for again donating £50 from its Bowen Trust Fund for prizes for the best original contributions from authors under 35 years of age, relating to scientific instruments or their use published in either of the Institute's Journals.

Bulletin.—The format of the monthly Bulletin, which is issued to members only, was completely changed for the 1954 volume. The twelve issues consisted of 240 + xlviii pages. In addition to reports of activities of the Branches and Groups, professional notices and lists of new elections, 20 articles were published, being either invited contributions or based upon lectures given to the Education Group. Reviews of 27 books were published. A total of 214 advertisements of vacancies for physicists or technicians were included.

Books and pamphlets.—A good deal of the Editorial staff's time has been devoted to work on further volumes in the *Physics in Industry* series and in the *Student Monograph* series. Unforseen delays prevented the fulfilment of the plans to publish these in 1954, and they will now appear early in 1955.

A new edition was issued of the pamphlet *The Scientific Education of Physicists* in which the data regarding schools of physics were brought up to date. In November a new edition of the Institute's *Handbook and Regulations* was published in which the full regulations and syllabuses for the graduateship examination

was included for the first time. A revised edition of the 32-page pamphlet *Notes on the Preparation of Contributions to the Institute's Journals and Other Publications* was also published during the year.

A third selection of *Laboratory and Workshop Notes* from the Journal of Scientific Instruments compiled and edited by Dr. Ruth Lang was published by Messrs. Edward Arnold (Publishers) Ltd. for the Institute. As with the first two volumes in this series the royalties are credited to the Institute's Benevolent Fund.

Catalogue of recent publications.—Some 25,000 copies of a revised 32-page catalogue of recent and forthcoming publications were again distributed.

Professional Matters

Professional Advice.—The Board expresses its thanks to the several Fellows who, during the year, have assisted the permanent Officers in answering the day-to-day requests for advice on professional matters. These have included such items as advice on consulting fees and salaries, deferment from military service, appropriate education and training in physics and its special branches and its ancillary subjects, and on sources of technical information.

Enquiry into the occupation of graduates.—For the second year, an enquiry was addressed to all new graduates in physics of universities in the United Kingdom. They were again asked to provide information about their present occupations and, if appropriate, the source of any maintenance grant. There was a good response. It is proposed to carry out such a survey in each of the next few years and to follow up the returns by making a subsequent enquiry of those at present engaged on research leading to higher degrees. In this way it should be possible to obtain information that will indicate clearly the way in which the services of physics graduates are being used.

The Institute's House

Gifts.—On March 16 Mr. O. W. Humphreys (Vice-President) on behalf of the Research Laboratories of The General Electric Co. Ltd., of which he is Director, presented to the Institute the set of tables which had been specially made for the Board Room.

On July 19 Dr. A. J. Maddock, formerly Chairman of the London and Home Counties Branch, presented a mahogany table and lectern made for the newly decorated lecture room, and subscribed for by members of the Branch.

On December 31 Dr. T. E. Allibone on behalf of the Research Laboratory of A.E.I. Ltd., of which he is Director, presented to the Institute a three pedestal mahogany table and set of chairs in Regency style. This suite like that in the Board Room has been designed for use for different purposes by arranging the parts of which it is composed in various combinations. The Research Laboratory of the Metropolitan-Vickers Electrical Co. Ltd., through the good offices of its Director, Dr. Willis Jackson, contributed towards the re-equipping of the canteen kitchen.

For these gifts the Board records here its most grateful thanks, not only for the gifts themselves but for these marks of appreciation of the Institute's work for the community generally and for physicists in particular.

Decorations and Repairs.—Owing to the need to limit the amount spent on the House in any one year, and the fact that a number of repairs became urgently necessary, it was only possible this year to re-decorate the lecture room and the kitchen. The opportunity was taken to carry out some minor structural and lighting improvements, and these have been much appreciated by the many members and non-members who come to the House for meetings.

Meetings.—The number of meetings held in the House during the year compared with the previous year is given in Table 3 :

Table 3. *Meetings held in the House*

Institute meetings	1953	1954
Board and Committee meetings (including Branch and Group Committees)	*78*	78
Conferences and Lecture meetings	*29*	33
Social functions	*9*	8
Other meetings		
The rooms have also been used by other bodies as follows :		
Committee meetings	*14*	21
Lecture meetings	*13*	9

Conferences

Conference on The Physics of Particle Size Analysis.—A conference on "The Physics of Particle Size Analysis" was held in the University of Nottingham from April 6 to 9, and was attended by nearly 300 persons. Thirty-three papers reporting new work were presented and discussed and three of the eight sessions were introduced by papers which surveyed recent advances. The papers were available as preprints, and the proceedings of the Conference were published in October as Supplement No. 3 to the *British Journal of Applied Physics.*

Other Institute Conferences. Several specialist conferences were held by the Institute's Branches and Groups and these are briefly reported below.

Annual Conference of Branch and Group Officers.—The 11th annual Co. rence of Honorary Officers of Branches and Groups was held at the Institute's House on July 19. The first part of the conference consisted of parallel sessions for the Branch officers and Group officers, the former meeting discussing such subjects as choice of lectures and visits and the latter meeting being concerned with matters such as the Group contributions to the next Institute convention and the Institute's policy relating to the publication of conference proceedings. Following these two meetings there was a general conference with Dr. J. Topping (senior Vice-President) in the chair ; among the items discussed were the Institute's future conferences and conventions, its publications, and educational work.

Conference Fees.—While welcoming the increasing numbers of non-members that attend Institute Conferences, the Board has been concerned how best to ensure that they contribute towards the continually rising cost of such meetings, which hitherto has been met almost entirely from members' subscriptions. Accordingly during the year, the Board gave instructions, that save in exceptional cases, there should be a minimum charge of one guinea to persons attending Conferences of the Institute who were not members of any grade.

International Union of Pure and Applied Physics.—The eighth General Assembly of I.U.P.A.P. took place in London in July. The Institute, jointly with the Physical Society, entertained the delegates and their ladies to dinner on July 9. The detailed arrangements for housing the assembly and for hospitality were in the hands of a small committee appointed by the Royal Society on which the Institute was reptesented. On the opening day the ladies were entertained to tea in the Institute's House.

Relations with the American Institute of Physics

The Officers had some useful discussions with Dr. Karl K. Darrow, a member of the Governing Board of the American Institute of Physics and Honorary Secretary of the American Physical Society, and Dr. Elmer

Hutchisson, formerly Editor of the (American) *Journal of Applied Physics*, Dr. Henry A. Barton, the Director and Dr. Wallace Waterfall, Executive Secretary of the American Institute of Physics when they were in England during the summer for the meetings of I.U.P.A.P.

Among the discussions held was one concerning the likely demand for English translations of Russian papers on pure and applied physics. The results of an enquiry made by the American Institute of Physics were reported and it was agreed that the (British) Institute and the Physical Society should jointly make a similar enquiry in this country and provision was also made for parallel enquiries on the Continent. The results of the enquiry were reported to the Board of the Institute and the Council of the Physical Society and were transmitted to the American Institute of Physics.

Miscellaneous

Design of Laboratories.—The Institute has interested itself in the design of laboratories since the original discussion on this subject by the London Home Counties Branch on November 19, 1947. During the year it learnt of the establishment of a new division of the Nuffield Foundation which was specially interested in this subject and offered to assist the division with information.

Royal Charter.—The Board again considered whether any advantage was to be gained by petitioning for a Royal Charter, and again decided not to proceed with this for the present. Work has therefore commenced on the drafting of revised Articles and By-Laws for the Institute which is incorporated under the Companies Act.

The Institute's Crest.—During the year the Board considered whether to have a new crest designed for the Institute ; it decided to take no action but to invite members to submit suggestions. There was practically no response to this invitation.

Activities of the Branches and Groups

Australian Branch.—President : Professor L. G. H. Huxley. *Vice-President :* Dr. F. W. G. White. *Honorary Secretary :* Associate Professor E. O. Hercus. *Honorary Treasurer :* Dr. J. S. Rogers. (415 members).

The Divisions of the Branch in the different States have held regular meetings, eleven in New South Wales, six in Queensland, four in South Australia and eleven in Victoria. The last included addresses from the visiting speakers, Dr. A. C. Menzies and Professor H. J. Bhabha.

The Victorian Division held an Exhibition of Scientific Apparatus in March, and a Conference on the Teaching of Physics in August.

Indian Branch.—Chairman : Sir C. V. Raman. *Honorary Secretary :* Mr. T. N. Seshadri. (90 members).

The Branch Committee has advised the Membership and Examinations Committee on applications received from India.

London and Home Counties Branch.—Chairman : Dr. J. S. Forrest. *Honorary Secretary :* Mr. B. S. Cooper. (1992 members).

Seven lectures were held in London. A visit was arranged in May to the laboratories and paper mills of Albert E. Reed & Co. Ltd., Aylesford.

Manchester and District Branch.—Chairman : Mr. J. W. Meredith. *Honorary Secretary :* Dr. G. D. Drummond. (455 members).

Seven lectures were held in the University of Manchester, one jointly with the Electronics Group, one jointly with the Chemical Society and one jointly

with the Education Group and Science Masters' Association. A summer visit was paid to the Christie Hospital and Holt Radium Institute. A Branch Dinner was also held.

Midland Branch.—Chairman : Dr. W. Betteridge. *Honorary Secretary :* Mr. W. C. Hynd succeeded by Dr. R. J. Wakelin. (439 members).

Five lectures were held in Birmingham. A conference was held jointly with the Non-Destructive Testing Group. Visits were arranged to the University College of North Staffordshire in March and to the G.K.N. Group Research Laboratory, Wolverhampton, in December.

Scottish Branch.—Chairman : Professor W. H. J. Childs. *Honorary Secretary :* Mr. T. H. O'Beirne. (375 members).

Twenty-one lectures were held in Glasgow, thirteen in Edinburgh, five in Dundee, three in Aberdeen and two in St. Andrews.

South Wales Branch.—Chairman : Mr. R. G. Wood. *Honorary Secretary :* Dr. M. R. Hopkins. (217 members).

Three lectures were held in Cardiff, two in Swansea (one jointly with the Electronics Group) and one in Aberystwyth.

North Eastern Branch.—Chairman : Mr. H. G. Yates succeeded by Professor W. E. Curtis. *Honorary Secretary :* Dr. N. Thorley. (98 members).

Four lectures were held in Newcastle and one in Durham.

Yorkshire Branch.—Chairman : Professor E. C. Stoner. *Honorary Secretary :* Dr. R. S. Tebble (211 members).

Two meetings were held in Sheffield, one in Leeds and one in Bradford. The Summer Meeting was held in Hull.

Education Group.—Chairman : Dr. J. Topping. *Honorary Secretary :* Mr. F. Y. Poynton. (272 members).

Four lecture meetings were held in London. The annual conference was held in the Institute's House. A visit was arranged to Birkbeck College. The summer meeting was held at the Royal Holloway College, Egham.

Electronics Group.—Chairman : Mr. G. W. Warren. *Honorary Secretary :* Mr. S. Rodda. (343 members).

Six lecture meetings were held in London, one in Manchester jointly with the Manchester Branch and one in Swansea jointly with the South Wales Branch. A conference on "Luminescence" was held in April at the Cavendish Laboratory, Cambridge. The papers and discussion on them are being published as supplement No. 4 to the *British Journal of Applied Physics*. A conference on "Fluctuations and the Limits of Measurement" was held in September at the Institute's House. A visit was arranged to the Mullard Research Laboratories, Salfords, Surrey. A joint meeting with the Physical Society was held in the Research Laboratories of The General Electric Co. Ltd., Wembley.

As a result of discussions with representatives of the Physical Society, a joint committee for electron physics was set up with the object of co-ordinating activities of the two bodies in the field of electron physics, defined as "the physics of the free electron and phenomena associated with it."

Electron Microscopy Group.—Chairman : Dr. V. E. Cosslett. *Honorary Secretary :* Dr. R. Reed succeeded by Dr. C. E. Challice. (246 members).

The Group was host to an International Conference which was held in London during July 16–21 and was attended by nearly 400 persons. This was the first Conference of the recently established Joint Commission on Electron Microscopy, though not the first International Conference on this subject.

Industrial Spectroscopy Group.—Chairman : Mr. D. M. Smith. *Honorary Secretary :* Mr. J. R. Stansfield. (160 members).

Four lecture meetings were held in London.

Non-Destructive Testing Group (formerly Industrial Radiology Group).—*Chairman :* Mr. W. E. Schall. *Joint Honorary Secretaries :* Mr. R. Meakin and Mr. B. R. Byrne. (300 members).

Eight meetings were held in London. A joint Conference with the Midland Branch was held in Birmingham in July.

Stress Analysis Group.—Chairman : Mr. E. K. Frankl. *Honorary Secretary :* Mr. B. Sugarman. (147 members).

The Spring conference was held in Nottingham. Visits were arranged to the Motor Industry Research Association, Nuneaton, to the College of Aeronautics, Bedford, and to the laboratories of University College, London. The winter conference was held at Reading.

X-Ray Analysis Group.—Chairman : Mr. H. P. Rooksby. *Honorary Secretary :* Mr. E. J. W. Whittaker. (402 members). The Spring Conference was held in the Cavendish Laboratory, Cambridge. The subject of the Conference was "New Developments in Structure Analysis." The Autumn Conference was held in the Royal Institution, London; the subject was "Structure of Metals."

Work under the direction of Professor A. J. C. Wilson has continued at the University College, Cardiff, on the provision of data for the index of diffraction patterns which is published by the American Society for Testing Materials. The fifth section of the index was issued in this country in May, 1954, and the Institute again acted as agent for its distribution. The proceeds from the sales of these copies, which are presented to the Institute by the American Society, are held in trust by the Institute for the Group and provide the source from which the work at Cardiff is financed.

The Group's Equipment Sub-Committee has continued its work and through the Scientific Instrument Manufacturers' Association arranged a joint meeting with manufacturers of X-ray analysis apparatus and ancillary equipment at which there was a useful exchange of views.

Acknowledgements

Branch, Group and Conference Officers.—The Board wishes to record its thanks to those members who have acted as Honorary Officers of the Institute's Branches, Groups and Conferences and who have thereby contributed greatly to the Institute's activities.

Meeting Rooms and Visits.—The Board record its thanks to the many bodies which have generously allowed meetings of the Institute and of its Branches and Groups to be held on their premises or which have allowed visits to their laboratories.

Finance

The general lay-out of the accounts follows the usual form; and the basis of the allocation of the costs of running the House and the offices, including staff wages and salaries is that originally adopted in 1952; no charges made against the Benveolent Fund for its administration. Taking the Institute's affairs as whole, i.e. combining the Institute's own account with the Trust Fund account there is a final deficit of £2,064 resulting almost entirely from the revaluation of the stock of publications (see below).

There is a possibilty that the Institute may be called upon to pay a substantial increase in rent for the House, which may be made retrospective to January 1, 1954; because the legal position has not yet been resolved, and negotiations are still proceeding, no reserve has been put in for this possible liability.

The Institute of Physics Accounts.—In noting the surplus on the year's working shown by this account, members are reminded that, as stated in our Report of 1952, from time to time some of these surpluses will have to be transferred to the Trust Fund so that members' subscriptions bear part of the cost of the Institute's educational and scientific work, in addition to strictly "professional" work to which this account is now confined. Indeed it is partly because of this expected transfer that the Trust Fund's debt of £4,519 has been allowed to remain outstanding.

It will be noted that further substantial gifts were made to the Furnishing Fund during the year, and these are gratefully acknowledged elsewhere in this Report. These gifts are not included in the figure for "fixed assets," as they have been written off in the year of purchase; the Fund is thus balanced off each year although it remains open for further gifts.

The Board gratefully acknowledges the receipt of £100 from the proceeds of the Sixth International Congress of Radiology in which the Institute's Industrial Radiology Group (as it then was) participated. The money is earmarked for "the development of the science of radiology," and is therefore included for the present under "For expenses" in the Balance Sheet.

In June a first payment of £1,625 was received from the bequest of £2,500 made to the Institute by the late Mrs. W. Phillips (widow of Major C. E. S. Phillips, the second Treasurer of the Institute); £500 of this has been earmarked by the Board for the purchase of one or two pieces of furniture for the House, which can be suitably inscribed as a reminder of the services rendered to the Institute by Major and Mrs. Phillips over many years.

Endowment Trust Fund Accounts.—While the Institute's publications business, which forms the major part of this account, again showed a surplus, this was some £3,500 less than the budgeted figure. The principal reasons are that the sales of books and of back numbers of the Journals were considerably less than had been expected, and because in the light of the past few years' experience the Board considers it prudent to reduce substantially the book value of the stock of the Journals still held. To meet the final deficiency in the Endowment Trust Fund Account, the Fund has been reduced to a nominal figure of £100 and a deficit of £1,788 has been carried forward in the hope that it can be liquidated in the near future, and the revaluation of the stock of publications will have a much smaller effect in future years. The Board has under consideration whether, and if so how, the Fund is to be built up again.

The X-ray Index Fund (which is held in Trust for the X-ray Analysis Group) is referred to above under that Group's Report.

As usual about half the subscriptions for the following year's Journals are received the previous year; in 1954 this figure was £8,871. The principal parts of the item £5,294 owing to the Fund are represented by the last quarter's invoices for publications (about £3,000) most of which are not paid until the turn of the year and the advertisement revenue for the same period (about £2,000).

Benevolent Fund

The Committee expresses its thanks to those members who have subscribed to the Fund during the year and to those responsible for the books, the royalties from which are credited to the Fund.

Allowances have been made to the widows of five members and also to two Associates who owing to severe illness were in need of help. The Committee is considering how best to help with the care of old people who might be eligible for assistance from the Fund, particularly in view of the bequest under the will of the late Mrs. W. Phillips.

Reports from Representatives on Joint Committee and other Bodies

Royal Society's National Committee for Physics.—The Committee's principal concern in 1954 was the arrangements for the General Assembly of the International Union of Pure and Applied Physics, which, after an interval of twenty years, was again held in London. The annual subscription to the Union was increased. There is a proposal to prepare a glossary of physical terms. The Committee was not in favour of the continuance of the Annual Tables of Constants. The Optical Sub-Committee has been very active during the year.

Royal Society's National Committee for Crystallography. The work of the Committee during 1954 consisted mainly in preparing for the meeting of the third General Assembly and the Congress of the International Union of Crystallography which was held in Paris in July.

Parliamentary and Scientific Committee.—The Committee has devoted much of its time this session to higher technological education and a Sub-Committee consisting of a few members from each House held a large number of meetings and took evidence from many authoritative witnesses in the educational and technological field. Its report which had wide publicity was published in the summer and sent to the several Ministers concerned. It was referred to in the House of Commons debate on the education estimates on July 26 and was the basis of a debate in the House of Lords on December 7 on a motion tabled by Lord Glyn, Chairman of the Sub-Committee. In general, the Report expressed views consistent with those of the Board of the Institute.

The main Committee has held 8 meetings and among the subjects on which it has been addressed are the following : Industrial applications of atomic energy ; Industrial and marine use of gas turbines ; Science and the industrial future ; Work and future of the Research Associations ; Recent developments in research and technology in the British shipbuilding industry.

Ministry of Labour Advisory Committee on Physics and Mathematics.—The Committee issued a progress report on the work of this section of the Register covering the period May, 1953, to April, 1954, the contents of which were received and noted by the Board.

Joint Council of Professional Scientists.—The Committee met in May for an exchange of views among the representatives of the constituent bodies on higher technological education, and on the shortage of suitably qualified science teachers in schools.

Royal Society's Paul Instrument Fund Committee.—During the year grants amounting to £26,020 were authorized for research on and development of novel types of instruments.

Joint Committee (with the American Society for Testing Materials and The American Crystallographic Association) for Chemical Analysis by X-ray Diffraction Methods. The Committee has continued its supervision of the work of extending the index and through the A.S.T.M. published the fifth section of the index.

The Court of the University of Hull.—The Court's business has related to the change from University College to University status. In particular it considered the Ordinances governing the granting of degrees by the new University. In general these Ordinances are in line with those obtaining at older Universities.

The Governing Body of Croydon Polytechnic.—The Governors have met twice since the appointment of a nominee of the Institute. Among the matters they have considered is the forthcoming move to a new building which will eventually accommodate 3000 students.

The Governing Body of Norwood Technical College.—The Governors have been concerned with the limited accommodation available and the continued increase of student-hours, which reached a record, 17% above the previous session, in 1953/54 ; the greatest increase has been in the telecommunications classes. Further expansion must await the completion of the building extension, which it is hoped will be in time for the 1955/56 session.

Advisory Sub-Committee for Electrical Engineering and Applied Physics of Cardiff College of Technology and Commerce.—At the first meeting of this Sub-Committee the Principal explained that it could assist the College by suggesting new courses and by obtaining the active co-operation of organizations interested in physics and electrical engineering. The Department of Applied Physics and Electrical Engineering developed advanced courses in telecommunications and electronics.

Applied Science Advisory Committee of the Royal Technical College, Salford. Three meetings were held during 1954. The Pure and Applied Physics Department has had an active year, with increased enrolments for degree and National Certificate courses. A course in Applied X-rays has been instituted for students for the Institute's Graduateship examination, and next year this will be available for Higher National Certificate students also. Four courses of "post-advanced" standard in applied physics were held and subjects for five courses for next year have been discussed by the Committee.

Regional Council for Further Education for the South West.—During th ast year this Council has been increasingly active, and the Annual Report displays satisfactory progress in the provision of additional courses and of accommodation. There are not many courses of a basically physical nature. The principal demand is for electronics and servomechanisms, though a rather ambitious course on "Atoms and the Universe " has been held. Another course of interest to the Institute was held over a week-end in the University of Bristol and was on the Rationalized Metre-Kilogramme-Second system of Units. This was well attended and attracted 70 students drawn from a wide range of Institutions.

London Regional Advisory Committee in Applied Physics.—The Committee has continued its consideration of a scheme for a four year full time course in applied physics and it is hoped that the syllabuses will be agreed early in the new year. Steps are being taken to obtain the interest and comments of the University of London and other appropriate educational bodies.

City and Guilds of London Institute—Advisory Committee on Laboratory Technicians' Work.—Comments were received by the Advisory Committee from universities and other bodies whose technicians had taken the examinations for the certificates. In the light of these comments a small Sub-Committee has been appointed to consider whether any modifications of the syllabuses should be introduced. Satisfactory arrangements have now been made whereby student technicians employed by educational institutions can be granted deferment from Military Service but it has not yet been found possible to establish a general scheme for the deferment of technicians in industrial laboratories.

City and Guilds of London Institute—Exploratory Committee for dustrial Radiography.—The draft scheme which had been approved by the Exploratory Committee and submitted to the Board of Studies of the City and Guilds of London Institute was referred back to the Advisory Committee for re-consideration on some points. The Exploratory Committee has now made several modi-

fications and it is expected that the scheme as modified will be approved and will be announced in the next issue of the list of awards offered by the City and Guilds of London Institute.

British Committee for Radiological Units.—The Committee has under consideration the implementation of some of the 1953 Recommendations of the International Commission on Radiological Protection, including such matters as (*a*) the general adoption of the rad, which is a new unit of absorbed dose, and is 100 ergs of absorbed energy per gramme of material irradiated by any ionizing radiation ; and (*b*) the request for supplementary data expressing the γ-ray emission from different radioactive isotopes in terms of röntgen per millicurie-hour at 1 cm from a point source.

BRITISH STANDARDS INSTITUTION COMMITTEES

Instrument Industry Standards Committee.—The Committee met once during the year to review the work of its several Sub-Committees and to consider proposals for new work.

Units and Symbols Standards Committee.—This Committee has approved several new Standards for publication which had been drafted by Sub-Committees. A revision is in progress of the standard on Conversion Factors and Tables. A section will be included on the units dealt with, giving their definitions in essence rather than in formal terms and is to include the recommended symbols or abbreviations for the units.

Sub-Committee on Terms in Use for High Vacuum Technology.—The Sub-Committee has met several times and is making progress in the drafting of definitions and the selection of terms.

Technical Committee on Abbreviations and Letter Symbols.—British Standard 1991 : 1954 : *Letter Symbols, Signs and Abbreviations, Part 1, General*, was issued during the year and is proving of great value to all concerned with the writing and printing of scientific literature, particularly that part which involves mathematics. The Committee has been considering preparation of further parts of this specification for specialist fields. It has kept in touch with international standardization through the International Standards Organization.

Joint Sub-Committee with the Institution of Electrical Engineers on Code of Practice on the use of Electronic Valves. In 1954 the British Standard Code of Practice CP1005 : Parts 1 and 2, were published in one booklet. Part 1 gives general recommendations for all types of electronic valves and Part 2 gives additional information and the recommendations on the use of domestic receiving valves, cathode ray tubes and rectifiers. The Committee is continuing its work and further parts dealing with the use of transmitting valves, magnetrons, photocells, discharge tubes and special quality valves are in an advanced stage of preparation.

Sub-Committee on Glossary of Terms used in Nuclear Science.—The Committee met five times during 1954. After having agreed on the type of terms to be defined, it was decided first to draw up a list of terms according to the following division : physics, reactor theory, reactor engineering, chemistry, chemical engineering, biophysics and radiobiology, instrumentation, isotope separation and metallurgy. The list of terms to be defined having been agreed the Committee went over to the main work of defining the terms. So far it has dealt only with letter A and B of the terms of the first section, physics. The Committee is now meeting regularly every month.

Technical Committee on Glossary of Rubber Terms.—The Committee has met five times and discussed definitions of statistical, chemical and technical terms. The work is continuing.

Technical Committee on Radiographic Examination of Welded Joints.—The work of this Committee has been continued and extended.

Technical Committee on Standardization of Radiology.—The standardization of voltages for X-ray equipment has been discussed. A proposal is to be put forward for the international standardization of pockets in the wings of aircraft for carrying radio-isotopes. Draft Standards for X-ray protective gloves and the dimensions of radio-active source-holders have been approved. The work of the various sub-committees has been reviewed and new sub-committees are to prepare standards for cone dimensions of X-ray equipment, for monitoring film holders and for X-ray film cassettes.

Sub-Committee on Terminology of Radiology.—The preparation of a glossary of terms used in radiology has been in hand for about seven years and the Sub-Committee has held 75 meetings. The glossary is now complete and includes between 900 and 1000 definitions. The main Committee has approved its publication and agreed that it be issued for an interim period of one year, after which it will be reviewed and extended as necessary.

Sub-Committee on Terminology of Casting Defects.—During the year the Committee has approved the final draft of this terminology.

J. D. COCKCROFT,
President.

S. WHITEHEAD,
Honorary Treasurer.

H. R. LANG,
Secretary.

B. P. DUDDING,
Honorary Secretary.

THE INSTITUTE

INCOME AND EXPENDITURE ACCOUNT

1953 £		£
	To Office and General Expenses :—	
3,071	Salaries and National Insurance	3,344
121	Staff Superannuation	142
966	Rents, Rates, Heating, Cleaning, Maintenance, etc. ...	1,080
782	Board, Committees' and Officers' Travelling Expenses	620
862	Printing and Stationery	666
290	Postage and Telephones	302
—	List of Members	582
138	Miscellaneous Expenses	196
6,230		6,932
344	„ Depreciation of Furniture and Fittings	381
1,646	„ Copies of Journals supplied to Members	1,671
378	„ Amount written off Expenditure on Alterations, Improvements and Adaptation of House	309
985	„ Leasehold Redemption Policy	985
3,287	„ Balance being Excess of Income over Expenditure carried to Reserve Fund	3,457
£12,870		£13,735

OF PHYSICS

FOR THE YEAR ENDED 31ST DECEMBER, 1954

1953			
£			£
10,863	By MEMBERS' SUBSCRIPTIONS		11,734
646	„ ENTRANCE AND OTHER FEES		656
80	„ DIVIDENDS AND INTEREST LESS TAX		88
	„ CONTRIBUTION FROM THE ENDOWMENT TRUST FUND for alteration of premises, depreciation of furniture and fittings, and leasehold redemption policy :		
	Charged to Cost of Publications	£838	
	Charged to other work	419	
1,281			1,257
£12,870			£13,735

THE INSTITUTE

BALANCE SHEET,

1953 £		£	£
	LIFE MEMBERSHIP FUND :—		
	As at 31st December, 1953	5,000	
	Less : Transfer to Reserve Fund in respect of deceased members	52	
5,000			4,948
	RESERVE FUND :—		
	As at 31st December, 1953	13,089	
	Add : Transfer from Life Membership Fund ...	52	
	Sinking Fund, Leasehold Property... ...	985	
	Income and Expenditure Account Balance	3,457	
13,089			17,583
	FURNISHING FUND :—		
	Donations received to 31st December, 1953 ...	1,132	
	Received during the year	924	
		2,056	
208	*Less :* Expenditure to date	2,056	
	CURRENT LIABILITIES :—		
	Payments received from members in advance ...	671	
	For Expenses	810	
2,468			1,481
—	Mrs. Phillips, Bequest		1,625
£20,765			£25,637

J. D. COCKCROFT, *President.*
S. WHITEHEAD, *Honorary Treasurer.*

Report of the Auditors to the

We have obtained all the information and explanations which to the best
our opinion proper books of account have been kept by the Institute so far as
the purposes of our audit have been received from Branches of the Institute not
and Expenditure Account which are in agreement with the books of the Institute
tions given to us the said Accounts give the information required by the Companies
view of the state of the Institute's affairs as at 31st December, 1954, and the
Income over Expenditure for the year ended on that date.

Spencer House, South Place, London, E.C.2.
18th February, 1955.

OF PHYSICS

31ST DECEMBER, 1954

1953		Cost to 31/12/53	Additions during year	Depreciation to 31/12/53	Depreciation during year	
£		£	£	£	£	£
	FIXED ASSETS :—					
1,884	FURNITURE, FITTINGS & OFFICE EQUIPMENT ...	4,592	489	2,708	381	1,992
7,184	ALTERATIONS, IMPROVEMENTS AND ADAPTATION OF PREMISES ...	10,290	—	3,106	309	6,875
9,068						8,867
	CURRENT ASSETS :—					
330	STOCK ON HAND—Stationery				363	
347	DEBTORS—Sundry Accounts				1,205	
1,480 Cr.	DUE FROM THE ENDOWMENT TRUST FUND ...				4,519	
48	SUBSCRIPTIONS IN ARREARS				53	
	INVESTMENTS :					
4,485	Quoted				4,485	
1,172	Unquoted				1,000	
	(*Estimated Market Value on 31st December, 1954, £5,481*)					
3,940	LEASEHOLD REDEMPTION POLICY				4,925	
2,855	BANK BALANCES AND CASH IN HAND				220	
11,697						16,770
£20,765						£25,637

Members of the Institute of Physics.

of our knowledge and belief were necessary for the purpose of our audit. In appears from our examination of those books, and proper returns adequate for visited by us. We have examined the above Balance Sheet and annexed Income in our opinion and to the best of our information and according to the explana- Act, 1948, in the manner so required and the Balance Sheet gives a true and ir Income and Expenditure Account gives a true and fair view of the Excess of

KNOX, CROPPER & CO., *Chartered Accountants.*

THE INSTITUTE OF PHYSICS

INCOME AND EXPENDITURE ACCOUNT

1953			
£			£
371	To Graduates and National Certificates Examinations ...		612
1,793	„ Expenses of Branches and Groups		2,100
873	„ Conference Expenses		350
83	„ Educational Booklets and Reports		179
	„ Cost of Production and Distribution of Publications sold	£30,936	
	Less : Transfer from Book Stock Depreciation reserve	181	
28,404			30,755
5,018	„ Proportion of overhead charges in connection with the work carried on by the Trust		5,407
427	„ Contribution to cost of repairs and alteration of House, depreciation of furniture, and Leasehold Redemption Fund		419
£36,969			£39,822

BALANCE SHEET,

1953			
£		£	£
	ENDOWMENT TRUST FUND :—		
	As at 31st December, 1953	3,834	
	Less : Transfer from Income and Expenditure Account	3,734	
3,834			100
	CURRENT LIABILITIES :—		
7,553	X-Ray Index Fund	10,037	
7,551	Publications, Subscriptions in advance ...	8,871	
3,371	Printing and Publishing Expenses	1,822	
3	Bowen Prize Fund	6	
1,480 Dr.	Due to the Institute of Physics	4,519	
			25,355
£20,832			£25,355

J. D. COCKCROFT, *President.*

S. WHITEHEAD, *Honorary Treasurer.*

We have audited the above Balance Sheet and have obtained all th
Bank Balances and the Investments. In our opinion such Balance Sheet
Fund according to the best of our information and the explanations given

Spencer House, South Place, London, E.C.2.

18th February, 1955.

ENDOWMENT TRUST FUND

FOR THE YEAR ENDED 31ST DECEMBER, 1954

1953			
£			£
306	By Fees for Examinations		566
164	„ Donations		150
139	„ Interest		189
33,263	„ Receipts from publications, including advertisements ...		33,395
300	„ Scientific Publications Grant (per Royal Society) ...		—
2,797	„ Transfer to Endowment Trust Fund		3,734
—	„ Balance carried forward		1,788
£36,969			£39,822

31ST DECEMBER, 1954

1953				
£		£	£	
	INVESTMENTS :—			
3,809	Quoted	5,309		
	Unquoted	1,500		
			6,809	
	(Estimated market value at 31st December, 1954, £6,896)			
	SAVINGS BANK DEPOSITS		1,202	
	STOCK ON HAND, PUBLICATIONS AND DISPATCH MATERIAL	7,298		
	Less : Book Stock depreciation reserve	2,038		
6,258			5,260	
4,598	SUNDRY DEBTORS, PUBLICATIONS, ETC.		5,294	
6,167	BANK BALANCES AND CASH IN HAND		5,002	
	INCOME AND EXPENDITURE ACCOUNT BALANCE			
—	(DEFICIT)		1,788	
£20,832			£25,355	

...formation and explanations we have required. We have verified th... ...operly drawn up so as to exhibit a true and correct view of the state of t... ... and as shown by the books of the Fund.

KNOX, CROPPER & CO., *Chartered Accountants.*

THE INSTITUTE OF PHYSICS

INCOME AND EXPENDITURE ACCOUNT

1953		
£		£
421	To Grants	41
408	„ Balance being excess of Income over Expenditure carried to Capital Account	30
£829		£72

BALANCE SHEET

1953			
£		£	£
	CAPITAL ACCOUNT :—		
	On 31st December, 1953	4,170	
	Add : Transfer from Income and Expenditure Account	303	
4,170			4,47

S. WHITEHEAD, *Chairman of Fund Committee.*
H. R. LANG, *Secretary of Fund Committee.*

£4,170	£4,47

We have audited the above Balance Sheet and have obtained all th Bank Balances and the Investments. In our opinion such Balance Sheet Fund according to the best of our information and the explanations given

Spencer House, South Place, London, E.C.2.
18th February, 1955.

ENEVOLENT FUND

OR THE YEAR ENDED 31ST DECEMBER, 1954

1953		
£		£
562	By Subscriptions and Donations	524
117	„ Interest	120
150	„ Royalties on Books	76
£829		£720

ST DECEMBER, 1954

1953		
£		£
2,633	GOVERNMENT SECURITIES, at cost ... ... (*Estimated market value on 31st December, 1954, £2,529*)	2,633
114	DEBTORS	44
1,096	CASH ON DEPOSIT AT POST OFFICE SAVINGS BANK	1,634
327	CASH AT BANK	162
£4,170		£4,473

formation and explanations we have required. We have verified the operly drawn up so as to exhibit a true and correct view of the state of the and as shown by the books of the Fund.

KNOX, CROPPER & CO., *Chartered Accountants.*

THE REGISTER

ELECTIONS TO MEMBERSHIP

An asterisk (*) indicates transfer from another grade

Fellows

*Dowland, William H., M.A., Senior Physics Master, West Hartlepool Grammar School.

Dunworth, John Vernon, M.A., Ph.D., Division Head, Reactor Physics, United Kingdom Atomic Energy Authority, Harwell.

*Greening, John R., B.Sc., Ph.D., Principal Physicist, St. George's Hospital, London.

*Hirst, Frank, M.Sc., Senior Lecturer in Physics, University of Melbourne.

*Peace, Anthony G., B.Sc., Ph.D., Head of Physics Department, North Staffordshire Technical College.

*Walker, John, B.Sc., Ph.D., Lecturer in Physics, University of Birmingham.

Associates

Badcock, Allan W., M.Sc., Assistant Lecturer in Physics, Borough Polytechnic, London.

*Baker, Philip S., M.Sc., Scientific Staff, Research Laboratories, The General Electric Co. Ltd., Stanmore.

Barmby, David Stanley, B.Sc., Ph.D., Scientific Officer, Wool Industries Research Association, Leeds.

*Bromiley, Jack V., B.Sc., Shop Manager, Instrument Section, United Kingdom Atomic Energy Authority Industrial Group, Salwick.

*Brotherton, Ian D., B.Sc., Senior Development Engineer, Cottage Laboratories Ltd., Cobham.

*Cockram, John C., M.Sc., Project Officer, Sir W. G. Armstrong Whitworth Aircraft Ltd., Salisbury, South Australia.

Crathorn, Austin R., B.Sc., Ph.D., Physicist, Radioisotopes Laboratory, Pollards Wood Research Station, Royal Cancer Hospital, London.

*Culpin, Michael F., B.Sc., Research Physicist, British Nylon Spinners Ltd., Pontypool.

*Dodd, David S., B.A., Assistant Lecturer in Physics, North Staffordshire Technical College.

*Flinn, Ian, B.Sc., Physicist, Research Laboratories, The British Aluminium Co. Ltd., Gerrards Cross.

*Granville, Raymond A., B.Sc., Physicist, Deputy Head of Fluid Dynamics Section, British Iron and Steel Research Association, London.

*Ham, Alan C., B.A., Ph.D., Scientific Officer, Structures Department, Royal Aircraft Establishment, Farnborough.

Huggill, John Anthony Wynne, M.A., D.Phil., Head of Research and Development Department, Simon Handling Engineers Ltd., Stockport.

James, Anthony R., B.Sc., Assistant Lecturer, Kingston Technical College.

*James, David B. G., B.Sc., Assistant Lecturer in Physics, Swansea Technical College.

Malcolm, Benjamin R., B.Sc., Ph.D., Research Physicist, Courtaulds Ltd., Maidenhead.

Pickard, Roger W., B.Sc., Experimental Officer, D.S.I.R., Fire Research Station, Boreham Wood.

*Raffan, William P. F., B.Sc., Development Engineer, Vacuum Tube Development Dept., Cinema Television Ltd., London.

*Roberts, David A. E., B.Sc., Physicist, Scientific Staff, Research Laboratories, The General Electric Co. Ltd., Wembley.

Rolph, Peter M., B.Sc., Ph.D., Temporary lecturer in Physics, University of Birmingham.

*Rose, Raymond P., B.Sc., Scientific Officer, Admiralty Research Laboratory, Teddington.

*Scott, Kenneth W., B.Sc., Assistant Physicist, Queen Elizabeth Hospital, Birmingham.

*Sheehy, Morgan J., B.Sc., Teacher of Physics, Institute of Science and Technology, Dublin.

*Turner, Alan, B.Sc., Physicist, Metropolitan-Vickers Electrical Co., Ltd., Manchester.

Wooding, Eric R., B.Sc., Ph.D., A.R.C.S., D.I.C., Senior Scientific Officer, Head of Electrical Section, Safety in Mines Research Establishment, Sheffield.

Wynn, Norman R., M.A., Research Physicist, Ilford Ltd., Brentwood.

Graduates

Bateman, Peter J., B.Sc., Scientific Officer, Royal Aircraft Establishment, Farnborough.

*Bilham-Boult, James, B.Sc., Engineer, Electric and Musical Industries Ltd., Feltham.

Cairnie, Alan B., B.Sc., Research Student, Institute of Physiology, University of Glasgow.

Carter, George, B.Sc., Senior Technical Assistant, Dunlop Rubber Co. Ltd., Walton, Liverpool.

Church, Geoffrey R., B.Sc., Assistant Experimental Officer, Atomic Energy Research Establishment, Harwell.

Davies, Mark C., B.Sc., Research Assistant, The Polytechnic, London.

Followell, Roy F., B.Sc., Post-graduate Research Student, University of Bristol.

Gardner, Robert R., B.Sc., Research Student, University of Aberdeen.

*Gibbs, Harry G., B.Sc., A.C.T., Technical Assistant, Joseph Lucas (Gas Turbine Equipment) Ltd., Birmingham.

Glenn, Peter, B.Sc., Research Physicist, British Celanese Ltd., Derby.

*Griffith, Ronald L., B.Sc., Research Student, Department of Physics, University College of Swansea.

*Hood, Peter J., B.Sc., Geophysicist, Seismograph Service Ltd., Keston.

Innes, Robert, B.Sc., Research Student, University of Aberdeen.

Jackson, Irene P., B.Sc., Technical Assistant, Dubilier Condenser Co. Ltd., London.

Jones, Trebor P., M.Sc., Technical Officer, Division of Physics, Commonwealth Scientific and Industrial Research Organization, National Standards Laboratory, Sydney.

Jordan, Brian J., B.Sc., Research Physicist, Isotope Developments Ltd., Woolhampton, Nr. Reading.

*Levy, Anthony, B.Sc., Research Student, Imperial College of Science and Technology, London.

McElhinny, Michael W., B.Sc., Research Student, Rhodes University.

Menarry, Alexander, B.Sc., Research Student, Manchester College of Technology.

*Millington, David E., B.Sc., Technician, Armstrong Siddeley Motors Ltd., Coventry.

Moore, Alan, B.Sc., Research Student, University of Birmingham.

Pallett, John E., B.Sc., Physicist, Electric and Musical Industries Research Laboratories Ltd., Hayes, Middlesex.

Saunders, John W., B.Sc., Research Engineer, Electric and Musical Industries Research Laboratories Ltd., Hayes, Middlesex.

Stephens, Kenneth G., M.Sc., Research Student, University of Birmingham.

Stuart-Monteith, Gerald, B.Sc., Experimental Officer, Royal Naval Scientific Service, Admiralty Signal and Radar Establishment, Portsmouth.